*Weapon Focus in the Written Word*

**An Honors Thesis (HONR 499)**

**By**

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*April 24, 2017*

**Expected Date of Graduation**

*May 6, 2017*

Abstract

The purpose of the current study was to determine if the weapon focus is present in the written word, and to determine if there is a gender bias in scenarios involving weapons. The researcher's hypothesis was that participants would recall more correct characteristics and less false characteristics when there was no weapon present, and would recall less correct characteristics and more false characteristics when there was a weapon present. The current study also predicted to find that participants would recall gender in the two weapon scenarios as gender stereotypical traits and weapons were present. Ninety-one undergraduate students from a university in the Midwest United States completed a demographic survey consisting of three multiple-choice questions and two short answer questions. Participants were presented with three written scenarios, one containing no weapon and two containing a weapon, and were asked six follow-up questions after each individual scenario. There were no statistically significant differences across scenarios for correct or false recalled characteristics, but the interaction of the three scenarios was statistically significant. The data yielded the same results in terms of gender recall.

Acknowledgments

I would like to profusely thank Professor Angela Nickoli for advising me through this entire process and for helping me flesh out a real plan from a simple idea, and for supplementing the brain draining brainstorms with Game of Thrones trivia. I would also like to thank Dr. Ritchey for helping me with computing and understanding my statistical findings, especially when I made them more complicated than was necessary. I would also like to thank the professors who allowed me to take class time to conduct my research. Finally I would like to thank Lori for proofreading each section in its entirety and catching mistakes I glossed over.

# Process Analysis

The process of creating and executing this thesis has been a whirlwind. From just coming up with an idea, to actually conducting research, I have experienced everything from smooth sailing to pretty intense turbulence. Everything from start to finish showed me that hard work really does pay off and that even though I thought research was going to be boring, it can be very rewarding.

Drafting a proposal from a simple idea was the first step in all of this. I had to come up with a plan of how I was going to carry out a plan I had not completely fleshed out yet. Once I had come up with a real idea that I could really dig into and get some real research going for, I had to find an advisor. With it being spring semester, several professors were already busy. I was lucky enough to have Professor Nickoli agree to be my advisor throughout the semester, which was absolutely amazing. In just one meeting we were able to flesh out most of my simple idea and make it into something that I was actually excited about looking into and doing my own research on. With every weekly meeting we had, I walked away with something new that I was excited to add and to look into. Drafting a proposal and getting it approved turned out to be the easy part.

After I had found the previous research to use for a base and a literature review, I knew that my research had a place in the pool of literature that already existed. I was still excited to move forward and began work on drafting the survey that I would use to administer my research. It was difficult to try and keep it manageable, because there were so many different aspects and pathways that I could have, and wanted, to take, but just did not have the time. Trying to fit all of this research into one semester meant limiting myself. I had to make sure that I was not biting off more than I could chew. Once the survey was drafted and I had a couple peers and my advisor

look it over, I was filled with pride that I had created something that would hopefully generate results. I had created it completely from scratch and felt that it was a survey that would hopefully get at what I was trying to test.

My first real roadblock came in the form of the IRB, the Institutional Review Board. I had previously been under the impression that I would not need to gain their approval because I was only using a survey. However, in a quick meeting with the graduate assistant in their office, it became clear that with over half of the semester over, I would need to begin the process of getting IRB approval before I could even begin to gather my own raw data. I quickly set up a meeting with Nickoli to figure out what needed compiled and then I set out to work. That same day I filled out the application; created the power point I would use for presenting the information in classrooms, created the actual handout that students would be given; attached Nickoli's and my own CITI training certifications; and created an adult informed consent form. After looking it all over, I submitted it to the IRB and hoped for fast approval. Within a week, and some quick revisions, I had gained exempt status from the IRB. This meant that I did not have to go through a full IRB approval process and could move forward with the research process. I had never been so happy to receive an e-mail.

With approval out of the way, I began the process of finding professors who would let me utilize ten minutes of their class time to give their students a paper survey. Two of the four professors gave me approval right away. One of the professors, I had to plead my case to, which was perfectly fine with me as I was definitely passionate of my research. The fourth professor I talked to did not have time to give, which sent me into a scramble. I had already determined which types of classes I wanted to use in my research, and being turned down by one of the base line classes was an added stressor. I immediately set out to find another professor who would

have time. There was only one other professor who taught the class that I wanted to get into. With crossed fingers, I sent an e-mail asking him for ten minutes of their class time. Luckily, they responded quickly, and with that I had all four of my classes locked into place.

I had scheduled all of these meetings within one week. Because of necessary rescheduling, I had to move dates around and ended up scheduling three of them in one day. As I looked at the lineup, I realized that I would have at least 100 sets of raw data to code by the end of the week. I was nervous to go into the classrooms and obtain the raw data, because this research had become my baby and I was worried about everything going according to plan. With some technical difficulties the day I had three meetings, I struggled through, and got most of the raw data I needed. It was a little awkward the first time I went into the classroom, but the other two went a lot smoother once I figured out what needed said and what did not.

At the end of all of this, I had 91 participants, so my guess of at least 100 was not entirely off. As I sat in my living room with piles of papers surrounding me and a blank excel sheet open in front of me, I realized that I had my work cut out for me. This was a lot of data and a lot of different aspects to code for. I had a key and went to it. Once I had everything coded and in different sheets on Excel, I realized again that I was proud of myself. I had everything coded *and* organized, not an easy accomplishment for me. Just glancing at the data I was able to see some interesting trends present themselves. I could only hope that the statistics would show these trends as significant. As I stared at the data more, I then had the sudden realization that I am awful at SPSS, which is the system I would be using to actually get my data. I e-mailed Dr. Ritchey in hopes that a previous professor of mine would be able to spare the time to help me get everything situated and get results generated.

I was able to meet Dr. Ritchey, and we spent an hour and half getting different tests run to see which one would best benefit my data. It was tricky to figure out how to present my data to the system to get results. In the end, I did not get the results that I had anticipated. The overall trend was not significant. Just as I was going to admit defeat, that I had wasted a semester to get insignificant results, I realized that the interaction was significant. Which means that while the differences were not significant on their own, the way they interacted was significant. This was almost cooler to me than just getting significance in my original anticipated way. I realized that for once, I could not wait to finish a research paper.

Once I really sat down and dug my teeth into the paper writing process of this, I realized that everything before (coming up with an idea, IRB, conducting the research, etc) might have been a cakewalk compared to the paper writing. There was so much information that I found and so much information that I generated myself that it was difficult to discern where exactly in the format of the paper to put it all. I was worried about getting convoluted. I had written research papers in the past, but realized that I had added more complex aspects, and wanted to look at more complex issues with this experiment than I had previously.

In diving right in to writing my results section, I realized that when I computed the data, a lot of it had gone over my head. I wrote out what I could and had to go back to Dr. Ritchey and figure out how to get this written in words that even I could understand. After I had left her office and got home to start writing it out, I realized that I had no idea how to actually format statistics in a written paper for the test that I ran. I had to make another appointment and go back. Turns out, I was making things a lot more complicated than they needed to be. It was a simple fix and I was back on the road to finishing this thing.

It turns out, the secondary purpose to my study ended up being a little more interesting than my primary focus and purpose. Looking at gender and how it was reported was more mind-boggling than just looking at the concrete numbers of correctly and falsely recalled characteristics. I talked with multiple people as to why the results for gender came out the way they did. It opened the door for me to do future research later in my graduate work that focused on gender and reporting crime and in lineups. I think writing the discussion part of this paper was my absolute favorite because some of my findings, while they seemed concrete, were anything but. Some of my findings left me with more questions than answers. As I put the finishing touches on this thesis, with three other papers I have previously written open for help with formatting, I realized that I thoroughly enjoyed the process, as stressful and chaotic as it was at times. In having all of this past work open, I have also found that this thesis has really shown me that I did learn something in my four years here at Ball State, and that this thesis is a true culmination of all of it. I can honestly say that I feel that I benefitted personally from this experience as a student and a professional. All in all, I am extremely proud of the work I have put forth, and even if the results were not what I expected them to be, I feel that I have added something very worthwhile to the research pool.

## Weapon Focus in the Written Word

When considering the first 130 convictions that were overturned by DNA testing in the United States, mistaken or faulty eyewitness accounts and identifications were cited in 78 percent of the false convictions (Stambor, 2006). This issue has been more prominent in recent years as eyewitness testimony is seen as less and less reliable. A phenomenon known as weapon focus is an explaining factor behind why eyewitness testimony is so faulty. Weapon focus is defined as: "the propensity for eyewitnesses to concentrate their attention on any weapon present at the setting where a crime has taken place, therefore hindering their capacity to recall other details of the crime setting, like the assailant's face" (Pam, n.d.). As memory and reading are both cognitive processes, the current study seeks to find whether the weapon focus is also present when scenarios are presented in the written word. The current study also seeks to find if there is an implicit gender bias when stereotypical traits are present.

One study, conducted by Maass and Köhnken (1989), recruited 86 nonpsychology students. The researchers tested to see if the presence of a syringe would cause the weapon effect to take place and if it would affect lineup recognition. The subjects were alerted to the fact that they may experience stress during the duration of their participation in the experiment. Participants were told that the experimenters were investigating the relation between sport-like physical activity and psychological well-being. This helped to explain the pre-screening questions and why participants took multiple questionnaires pertaining to mood. Experimenters also gave a fake health questionnaire to keep up the guise. Participants were equipped with a chest strap, which served to keep some aspects constants, in a room full of psychological equipment. After an interim period, a female entered the room in a lab coat. She would be the

individual who served as the target. She would have a pen or a syringe, and would either pose a threat, or pose no threat of injection. (Maass & Köhnken, 1989)

Each participant was tested individually. In the half of experimental sessions that the syringe was present, it was held at hip height, so that it would be easy to distinguish if the participant was looking at hand or face. In the other half, the pen was held at the same height and was the same length as the syringe. In conditions where there was a threat of injection, the female entered the room with the syringe, told the participant they would experience the injection with a slightly unpleasant prickling sensation, and asked if they could roll up their sleeve. The female then placed the syringe behind medicine bottles so that it was out of the line of sight of the participant. The placement of the syringe or pen was consistent in all conditions, but in the non-threatening situations the female took a bottle of medicine from the tray and left the room. There was an interim period between this interaction and the follow-up interview; however, immediately following the condition participants were given a mood questionnaire, and a questionnaire that asked about their emotional state during the experimental session. In this study, a third experimenter who was blind to which condition the participant had come from administered the recognition and recall questionnaire. (Maass & Köhnken, 1989)

Results for the study were three-fold: the results looked at mood, recognition, and recall. In terms of mood, it was shown that the syringe had a large effect on the mood of the participants. The simple presence of the syringe elicited a more negative response than did the threat of injection. This shows that the presence alone was enough to elicit a stress response of tension and unease. However, the threat of injection or the reassurance of avoiding injection did not significantly change mood. Subscales of anger and agitation were also tested, and found again that participants who were exposed to the syringe were more agitated and angry than those

who were not. Again, threat or reassurance pertaining to the injection had no significant effect. When recognition was tested, the trend followed that of the mood scale: there were significantly more false alarms from participants who were exposed to the syringe, but there was a nonsignificant trend for more false alarms from participants who had been threatened with injection. Participants who were exposed to the syringe recalled significantly more detail about the hand area than other groups, as did participants who were threatened with injection. The results show that the more stressful the situation, the more participants are drawn to the weapon. (Maass & Köhnken, 1989) This study helps the current study in aiding in the anticipation of there being more false recall when weapons are present in the scenarios. If there are more descriptors of a weapon in the weapon scenarios, it can increase stress levels when it is perceived that there is more information that will be expected to be recalled.

Another study by McRae, Sharps, Power, and Newton (2014) aimed to find if the typicality of a weapon and the consistency of a backstory would influence memory of the details of a weapon. Forty-seven women and 13 men were recruited from a collegiate psychology department pool. The experiment utilized a between-subjects design. Two photos were used as stimuli: one photo showing the suspect with a .45-calibre Colt and the other with a .50-calibre flintlock muzzle-loading pistol from the 19$^{th}$ century. Both suspect and victim were fully shown with the weapon in plain sight. Participants were told they would view a "confrontation of their neighbors John and Robert, in which John had a gun" (McRae, Sharps, Powers, & Newton, 2014). Half of the participants were told that John is a businessman who collects sports memorabilia, while the other half were told that John is an antiques dealer who specializes in antique weapons. (McRae, Sharps, Powers, & Newton, 2014)

At the start, participants were given the descriptions of the scenes they were about to see and told to read them at their own pace. Participants were then shown the appropriate picture for five seconds and then told to provide a demographic description of John. After ten minutes were allotted, participants were asked to fill out a packet, the first question of which asked them to describe in detail the firearm they had seen. The numbers of correct and falsely recalled descriptors were tallied for each participant. After the packet was completed, participants were given a six-person line up and asked to identify John if possible. Again, the numbers of correctly and falsely identified lineups were tallied. The results of the study yielded that there was no significant effect of either weapon in terms of correctly recalled weapon descriptions; however participants were more likely to correctly describe the weapon with the antiques dealer backstory than the businessman. On the other hand, participants were significantly more likely to falsely describe the .50-calibre flintlock, and were significantly more likely to falsely recall details with the antiques dealer context than the businessman context. In both correct and false recall contexts; there was no significant relationship between the variables of weapon and backstory. There were no significant results pertaining to accuracy of identification in a lineup. The results of this study show that when the situation is consistent with what participants are expecting and are typical they are more likely to recall characteristics correctly. (McRae, Sharps, Powers, & Newton, 2014) The current study will utilize aspects from this study in the way that it will keep the weapons typical and not surprising. The goal is not to trick participants, but to see if weapons will draw their attention away from the suspect. McRae, Sharps, Powers, and Newton (2014) prove that the situation does not have to be happening live to gain results. The current study will anticipate this outcome to replicate itself in writing as it did in photos.

Pickel (1999) conducted another study that focused on the influence of context in the weapon focus. The researcher aimed to examine whether the unusualness of the setting the weapon was in made a difference. Again, this study also examines the level of threat and how that is influential in situations where a weapon is present. Participants were recruited from a Midwestern university and were separated into groups of up to eight students. Each group of students watched a video that was about 68 seconds long. The video contained a woman who was approached by a male carrying a gun. The woman hands the man money and the man leaves. In one situation the interaction takes place at a baseball field, while in the other situation the interaction takes place at a shooting range. Half of the participants were shown these situations with a low threat factor, while the other half viewed it with a high threat factor. After viewing the brief video, participants spent ten minutes filling out a follow-up questionnaire that tested memory of the woman and the man. After the videos, participants were asked to pick the male out of a photo lineup. After identification took place, participants were asked to rate their confidence in their choice. (Pickel, 1999)

Results of the study yielded that there was no significant difference in the accuracy of recalling the woman. However, participants scored significantly less in correctly recalling factors of the man when he was present at the baseball field. The level of threat did not influence memory scores. There was no influence by any of the variables on participant's ability to pick the target out of a lineup. (Pickel, 1999) The current study will use this information in formatting the scenarios. Here we have context in terms of setting. The current study will be testing for implicit bias in terms of gender, and will aim to see if a "typical" weapon and setting with allow for different recall rates.

Another study by Pickel (2009) examines gender in the scope of eyewitness testimony and weapon focus. Participants were again recruited from a university in the Midwest. This study was comprised of three experiments that examine gender, but two were most pertinent to aiding the current study. In all experiments participants were shown a video in which an individual, male or female, is waiting in a parked car until two individuals approach. The suspect then jumps out of the vehicle holding a weapon or a neutral object with the intent to rob. After viewing the video, participants were asked to recall details about the robber and also rate how unusual the weapon they were holding was. (Pickel, 2009)

In the first experiment, participants were shown a video in which an individual (half saw male, half saw female) got out of a car wielding either a gun, or a neutral object such as a music CD. Participants were then asked to identify characteristics of the individual and the unusualness of the object held. Results showed that participants were less likely to correctly identify characteristics when the gun was present, and that they were less likely to correctly identify characteristics when the woman was holding the gun. The weapon was also scored as more unusual when the woman held it than when the man did. This shows that the weapon focus was present, because more focus was on the weapon than the characteristics of the individual. It also shows that gender does play a role in that the handgun, which is prototypical of the male gender, was seen as being more unusual when held by the woman. (Pickel, 2009)

The second experiment replicates this, but uses different objects. The individual either wielded a stereotypically male object like a camping knife; a stereotypically female object like knitting needles; or a neutral object like a CD. The same results were found in terms of correctly recalled details; more correct details were recalled about the male than the female. In terms of the influence of the object, the most correctly recalled characteristics for the female were

produced when she held the CD and the least were recalled when she held the knife. The most characteristics that were correctly recalled for the man were when he held the CD and the least when he held the knitting needles. When the experimenter looked just to the two "gendered" items, participants were able to recall significantly more correct details about the man when he held the knife than the knitting needles, and more correct details about the woman when she held the knitting needles than the knife. The knife and knitting needles were seen as being more unusual than the CD. The knitting needles were seen as being more unusual than the knife when held by the male, while the opposite was true for the female. (Pickel, 2009) This study aids the current study in determining which weapons to make present in the two prototypical weapon scenarios. The current study will utilize a bladed object for the prototypically female scenario as it is seen that women were seen as more likely to use these types of objects. Because in both experiments it was seen as more usual for the male to hold a gun, the current study will replicate this.

The current study expands and differs from past research in that it utilizes the written word, where the previous studies have used pictures and videos to discern whether the weapon focus is present. The current study will anticipate similar results as previous studies. Two studies (Maass & Köhnken, 1989; & McRae, Sharps, Power, & Newton, 2014) found that the scenerios did not have to be presented in a live action form for there to be results. This proves that the current study has grounds to be presented in the manner constructed and that the written word may have the same effect as photos and other media. Two of the experiments found (Pickel, 1999; & Pickel, 2009) focused on gender; however, there was not a lot of other research done in terms of eyewitness testimony, gender, and the weapon focus. This shows that the current study will add to a shallow research pool in this area. Cognitive processes such as memory are used in

every day life, including the identification of suspects in a line-up or in eyewitness interviews. The current study differs from the previous studies in that it uses the written word, and focuses on gender, while much of the focus in the criminal justice world in the public's eye is on race. It is important to discern how memory is affected when weapons are present, no matter the medium.

Based on the literature, the current study predicts to find that participants will correctly recall more characteristics and falsely recall fewer characteristics when a weapon is not present than when one is; but also that participants will falsely recall more characteristics and correctly recall fewer characteristics when a weapon is present than when one is not. The current study also predicts to find a gender bias in the two weapon scenarios as gender stereotypical traits and situations are present.

## Method

### Participants

The participants of the current study included 91 volunteer undergraduate students from a university in the Midwestern United States. Participants were made aware of the study through the researcher's presence in the classroom where they completed the experiments. A little over half (58.2%) of the participants were female, 37.4% were male, while the remaining 4.4% reported their gender as Other. The majority (78%) of participants were Caucasian, 7.7% were African American, 6.6% were Hispanic, 3.3% were Asian, while the remaining 4.4% identified their race as Other. When asked their class level in year at their university, 15.4% reported being Freshmen, 11% reported being Sophomores, 42.9% reported being Juniors, and 30.8% reported being Seniors. In terms of their major; 41.8% reported a Criminal Justice and Criminology major, 37.4% reported Psychology as a major, 8.8% reported a double major in both of these

fields, and 12.1% reported a major other than Criminal Justice and Criminology or Psychology. A check was done at the beginning of each class that the experiment was conducted in to assure that there was no overlap in participants. Participants partook in the experiment voluntarily, and received no compensation for their participation.

**Materials**

An adult informed consent form was created by the researcher in order to inform participants of the purpose of the study, and to alert them of the anonymity and voluntary nature of the experiment. This was kept separate from the survey and answer sheet. A survey to gather demographic information was also created by the researcher and was comprised of three multiple-choice questions and two short answer questions. On the flip side of the demographics survey was a sheet with instructions at the top. Under the instructions were three columns with space to answer six-follow up questions. The researcher also created three scenarios to be used in the experiment. The first scenario was comprised of a suspect with neutral characteristics and no weapon. The second scenario was comprised of a suspect with stereotypically female characteristics and a weapon resembling a blade. The third scenario was comprised of a suspect with stereotypically male characteristics and a weapon resembling a handgun. The follow-up questions pertained to the characteristics of the individual in the scenarios including their hair color, build, height, weight, age, and gender. While the question of gender is asked, the gender of the suspect is never given in any of the scenarios. This question is to test for implied gender biases. A PowerPoint was created to display the scenarios and follow-up questions. A PowerPoint was used so that the researcher could control the time of exposure to the scenarios and time allotted to answer follow-up questions. This also prevented participants from being able to flip back and forth, thus forcing them to recall characteristics from memory instead of simply

looking the answers up. The slides containing the follow-up questions were not the same throughout. The same six questions were presented in different orders all three times to ensure that participants would not be primed to the order of traits to look for.

**Procedure**

The study used a within-subjects design, in which all participants were exposed to the same scenarios, in the same order, and shown the same set of follow-up questions. Participants were made aware of the experiment through the presence of the experimenter in the classroom. The researcher used the beginning of scheduled class time to conduct the experiment, as was discussed weeks prior with the professor of the classes. A projection of the cover slide of PowerPoint containing the scenarios and follow-up questions was presented prior to the start of class. Once class time started and all students were seated, the experimenter passed out the handout packets. Participants were instructed to tear away the first page, as that was the informed consent and was their information to keep. The researcher pinpointed important aspects of the informed consent as participants read through, such as: the anonymity of the study, the safe location the raw data would be kept in, the voluntary nature of the study, the contact information for the counseling center, researcher, and faculty advisor, and a brief overview of the purpose of the study. Participants were allotted as much time as needed to carefully read through the informed consent form. During this time, participants were also instructed to fill out the demographics survey. After the researcher verified that everyone had read through carefully and was prepared to begin, the instructions were presented on a slide of the PowerPoint and read aloud. Participants were told they would be presented with three scenarios, at the end of each would be six follow-up questions. Participants were asked to complete all six questions even if they were unsure of their answer. Once instructions were presented, the first scenario was

presented. Participants were given thirty-five seconds to read through this scenario. At the completion of the allotted time, the slide was changed and participants were given another thirty-five seconds to answer all six follow-up questions presented. This was repeated twice more with the remaining two scenarios. Once all three scenarios and follow-up question slides were run through, a black screen was shown, signaling the end of the experiment. Answer sheets were collected; participants were thanked and told to e-mail the researcher or the faculty advisor with further questions or to request the results. The researcher then left the classroom. The entire process elapsed a total of about ten minutes.

## Results

The purpose of the current study was to determine if the weapon focus phenomenon is present in the written word as it is in photo recreations and real-life scenarios. The current study also sought to find if there was a gender bias in terms of whether participants would recall suspect's gender when no gender was reported in the scenarios. The hypothesized results were that participants would correctly recall more characteristics and falsely recall fewer characteristics when there was not a weapon present, but that participants would correctly recall less characteristics and falsely recall more characteristics when there was a weapon present. In terms of gender bias, the hypothesized results were that participants would recall gender more often than not. The current study was comprised of one independent variable with three conditions (neutral scenario with no weapon, weapon scenario with stereotypically female traits, and weapon scenario with stereotypically male traits), and two dependent variables (correctly recalled characteristics and falsely recalled characteristics.)

An answer sheet with a total of six spaces for answers was presented to participants, who were asked to fill in every blank. To assess participant's recall of the suspect's characteristics, a

correct answer was coded as 1 point toward "Correct", while an incorrect answer was coded as 1 point toward "False". Scores were totaled so that each participant had one score for "Correct," with the total possible scores ranging from 0 to 6, and one score for "False", with the total possible scores ranging from 0 to 6. The number of correctly recalled characteristics was the first dependent variable, and the number of falsely recalled characteristics was the second dependent variable. If any answers were left blank, that participants' data would have been omitted; however, no deletions were necessary. Because gender was questioned as one of the six follow-up questions, but was never given in the scenario, any recall of gender was marked as False. The gender reported was made note of separately.

Results for recall were gained through an analysis of variance (ANOVA). When looking for an effect across all three scenarios, no significance was found for correctly recalled characteristics [$F(2, 270) = 2.02$, $p = .14$] or the falsely recalled characteristics [$F(2, 270) = 2.15$, $p = .12$]. However, a significant interaction was found between the three scenarios for both correctly recalled characteristics [$F(1, 270) = 2329.36$, $p < .001$] and falsely recalled characteristics [$F(1, 270) = 766.03$, $p < .001$]. When paired samples t-tests were run for the individual scenarios and recall scores, significance was found between all three conditions. There was a significant difference in the first scenario (Neutral/No Weapon) between the number of correctly recalled characteristics ($M = 4.03$, $SD = 1.36$) and the number of falsely recalled characteristics ($M = 1.96$, $SD = 1.37$), $t(91) = 7.27$, $p < .001$. There was also a significant difference in the second scenario (Implied Female/Weapon) between the number of correctly recalled characteristics ($M = 3.71$, $SD = 1.20$) and the number of falsely recalled characteristics ($M = 2.29$, $SD = 1.20$), $t(91) = 5.70$, $p < .001$. Finally, there was a significant different in the third scenario (Implied Male/Weapon) between the number of correctly recalled characteristics

($M = 3.68$, $SD = 1.35$) and the number of falsely recalled characteristics ($M = 2.32$, $SD = 1.35$), $t(91) = 4.82$, $p < .001$. This means that while there was no overarching significance found, the individual scenarios had significant differences within themselves. The difference becomes smaller and smaller, meaning that the gap between the amount of correctly recalled characteristics and falsely recalled characteristics becomes less and less from scenario 1 to scenario 2, as well as from scenario 2 to scenario 3. This means that participants on the whole were able to recall less correct characteristics and were reporting more falsely recalled characteristics as the scenarios progressed. See Figure 1 for a visual representation.

To see if there was a difference in the amount of times gender was recalled between scenarios, an analysis of variance (ANOVA) was run. There was no significant difference between the three scenarios and number of times gender was recalled, $F(2, 270) = 1.43$, $p = .24$. Again, the interaction between the three scenarios was significant, $F(1, 270) = 4782.42$, $p < .001$. A frequency table was generated for each scenario. In scenario 1 Female was reported as suspect's gender 0% of the time, Male was reported 60.2% of the time, and None was reported 37.6% of the time. In scenario 2, Female was reported as suspect's gender 12.9% of the time, Male was reported 40.9% of the time, and None was reported 44.1% of the time. Finally, in scenario 3, Female was reported as suspect's gender 0% of the time, Male was reported 52.7% of the time, and None was reported 45.2% of the time. This means that participants were more likely to report Male than to report Female or report no gender.

## Discussion

The purpose of the current study was to determine if the weapon focus is present in the written word as it is in actual situations. The current study also sought to find whether there was an implicit gender bias in terms of reporting crimes. The current hypothesis was that participants

would correctly recall more and falsely recall less characteristics when a weapon was not present, and that they would correctly recall less and falsely recall more characteristics when a weapon was present. The current hypothesis in terms of gender bias was that participants would exhibit a gender bias in the two weapon scenarios. On the contrary, the current study found that there was no significant relationship between the scenarios and how many characteristics were recalled either correctly or falsely. The current study did find that there were no significant relationships between the scenarios and gender recall across all scenarios. However, for both characteristic recall and gender reporting, there were significant interactions and significance within the individual scenarios.

The current study does not fall in line with the two literary reports of weapon focus (Maass & Köhnken, 1989; & McRae, Sharps, Power, & Newton, 2014) in that it did not find that the weapon focus was significantly present in the scenarios. This could be because these two studies used photos and videos in order to gain their results, where the current study uses written scenarios. The interactions between the scenarios were significant, however. In terms of the current study, this means that the gap between the number of correctly and falsely recalled characteristics became smaller. If placed on a graph, the area where the linear representations of the data meet and cross would be significant. See again Figure 1 for a visual representation. The relationship between the linear representations is significant. This shows that while the data may not be outright significant, it is not seemingly possible to completely rule out the possibility that the weapon focus was present; it was just not as strongly present as if the scenarios were presented in photos or video.

While both articles written by Pickel (1999, 2009) that the current study expanded on were successful in using contextual clues for gender recall, the current study did not find this as

useful. As in both experiments by Pickel (1999, 2009), the current study used gender typical weapons to determine if this would influence gender recall. It did not. In both scenario 1 and 3, participants were more likely to recall gender as being Male than either Female or None. This was only different in scenario 2, where participants were most likely to identify that there was no gender specified over Male or Female. As with characteristic recall, the general data across all scenarios was not significant; however, the interaction between the three scenarios was significant. This is probably likely due to the fact that in scenario 1 and 3, zero participants recalled Female as the suspects gender, while 12 participants recalled Female as the suspects gender in scenario 2. This would skew the interaction.

There are multiple reasons that these results may have been found. Participants may have been less likely to label the suspect as Female, because we typically see males as the perpetrator of violent crimes more so than females (Maston & Klaus, 2007). It may be easier for participants to fill in the blank with what they are most exposed to in the media. It was interesting to find that participants were most likely to recall Male as gender when the scenario was completely neutral and when it was stereotypically male, but were most likely to report no gender when the scenario was stereotypically female. One thought would be that the own-gender bias took effect in the experiment. The own-gender bias is the thought that individuals can better recall suspects and other individuals of their own gender in situations better than they can the opposite gender (Herlitz & Lovén, 2013). However, this is not the case as 58.2% of participants were female, while not nearly that many (12.9%) recalled Female as the suspect's gender, and only for one scenario. The questions these results raise further the need and implications for future research.

One limitation of the study may have been the issue of reading speed. While 35 seconds seemed to be enough time to read through the short paragraph, reading speed cannot be

generalized across all participants. When paired with another limitation, that of visibility in the classroom, we have the issue of being able to read through the entire scenario. The arrangement of chairs in a few of the classrooms were not conducive to ease of sight. Another limitation may have been that, as most participants were in the psychology or criminal justice and criminology major, they may have been pre-exposed to the theory of weapon focus and may have been primed to avoid focus on the weapon. One final limitation in line with priming as well is that while the follow-up questions were asked in different orders, the same 6 traits were asked for recall purposes. Participants may have been primed as to which characteristics to look for in the scenarios. These limitations may have prevented statistical significance.

The results of the current study add to the research pool a new perspective to add to the discussion of eyewitness accountability, especially in terms of identification and gender. The field has already benefitted from various studies of eyewitness and racial biases (Aronstam, & Tyson, 1980; Ayuk, 1990; Malpass, 1974; & Meissner, Susa, & Ross, 2013). Research supporting the cross-racial bias has led to the necessity of debriefing juries as to the effects it has on the trial and on eyewitness testimony (Connelly, 2015). The current research lends to that the importance of educating juries to the effects of gender and how the weapon focus plays a role. Regardless of the significance of the data in the current study, past research exemplifies this need further. While the current study did not yield the results the researcher anticipated, future research could aim to fix the limitations of the study by anticipating reading speeds as well as asking a variety of recall questions. As mentioned earlier in the discussion, future research could focus more on the gender aspect of this study and exemplify it further by using more scenarios and different contexts. Pre-research questionnaires could gauge participants' attitudes and beliefs toward gender and crime, which may aid in narrowing down why the results of the current study

were so skewed toward the recalling of Male as the suspect's gender even when the scenario was not implied male.

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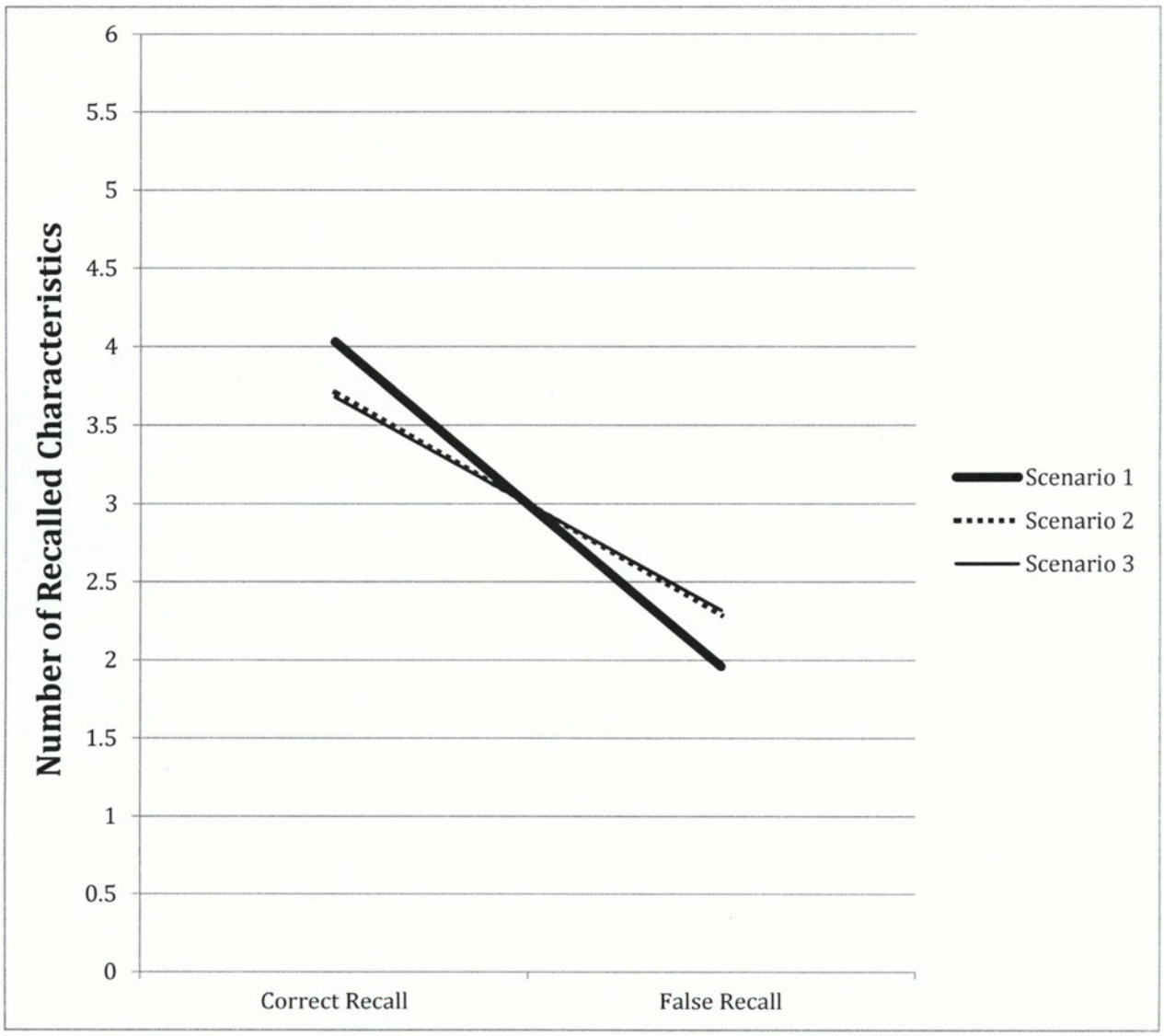
Figure 1

*Interaction of Correctly and Falsely Recalled Characteristics over the Three Scenarios*



Appendix A

**Study Title** **Weapon Focus in the Written Word**

**Study Purpose and Rationale**

The objectives of the study are to determine if subjects will experience the weapon focus and implicit biases in the written word in the same way they would in an actual, live action scenario. Research has been done to examine race in these terms, but not much as been done in terms of gender. This research aims to provide data pertaining to the factor of gender and weapon focus.

**Inclusion/Exclusion Criteria**

Inclusion Criteria: Must be 18 years of age or older; must be a Ball State University student
Exclusion Criteria: Younger than 18 years of age; not a Ball State University student

**Participation Procedures and Duration**

Subjects will receive two pieces of paper. The first page is a demographics survey. You will be given one minute to complete this. I will be showing a PowerPoint with three scenarios, all followed by six follow up questions. Subjects are to complete these follow up questions even if they believe their answer is incorrect. Thirty seconds will be provided for reading the scenario, and an additional thirty seconds will be provided to complete the follow up questions. At the completion of the survey, I will be collecting the pages and taking them with me. This is expected to take no more than ten minutes.

**Data Confidentiality or Anonymity**

All data will be maintained as anonymous and no identifying information such as names will appear in any publication or presentation of the data.

**Storage of Data and Data Retention Period**

Raw data will be kept in a locked, weather proof strong box in my home, which is locked with a key that is only in my possession. Once raw data is transferred to electronic means, it will be kept on a password locked computer. I will be keeping the data for approximately two months.

**Risks or Discomforts**

There are no perceived risks for participating in this study.

**Who to Contact Should You Experience Any Negative Effects from Participating in this Study**

The Ball State University counseling center can be contacted should you need any medical or counseling services. There offices are located in Lucina Hall, room 320. They are open from 8 a.m to 5 p.m. Monday through Friday and can be reached by telephone at 765-285-1736 or by e-mail at counselctr@bsu.edu.

**Benefits**

There are no perceived benefits for participating in this study.

**Voluntary Participation**

**"Your participation in this study is completely voluntary and you are free to withdraw your permission at anytime for any reason without penalty or prejudice from the investigator. Please feel free to ask any questions of the investigator before signing this form and at any time during the study."**

**IRB Contact Information**

For one's rights as a research subject, you may contact the following: For questions about your rights as a research subject, please contact the Director, Office of Research Integrity, Ball State University, Muncie, IN 47306, (765) 285-5070 or at irb@bsu.edu.

**Study Title** **Weapon Focus in the Written Word**

**Researcher Contact Information**

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Demographic Survey:

1. How do you identify your gender?
    a. Female
    b. Male
    c. Transgender
    d. Other
    e. Prefer not to say

2. How do you identify your race?
    a. Caucasian
    b. African American
    c. Hispanic
    d. Asian
    e. Other
    f. Prefer not to say

3. What is your current year at Ball State?
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior

4. What is your major?

5. What is the highest level course you have taken or are currently taking in your major?

You will be presented with three scenarios. At the end of each you will be asked a series of questions. Please complete each question even if you are unsure of the answer.

Answer Sheet:

| Scenario 1: | Scenario 2: | Scenario 3: |
|---|---|---|
| 1. | 1. | 1. |
| 2. | 2. | 2. |
| 3. | 3. | 3. |
| 4. | 4. | 4. |
| 5. | 5. | 5. |
| 6. | 6. | 6. |

## Appendix B

Neutral Scenario:

Victim reports that the suspect approached them in a back alley sometime around 3 PM. Victim reports that suspect was of average height, somewhere in the range of 5' 6". As the suspect approached, the victim reports being able to tell that the suspect appeared to be about 32 years old with medium length, dark brown hair. Suspect is reported to be of average build in the range of 180-190 pounds.

1. What was the suspect's height?
2. What was the suspect's age?
3. What was the suspect's hair color?
4. What was the suspect's build?
5. What was the suspect's weight?
6. What was the suspect's gender?

Weapon Scenario:

A statement given placed the suspect in the area of a shopping mall at about 7 PM. Suspect was slightly less than average height, seen to be about 5' 4". Suspect has been reported to be carrying an oblong shaped object resembling a knife. Reports state that the suspect appeared to be 22 years old with long, light blonde hair. The wielded object appeared to be 7 inches in length. Suspect has a slender build and appeared to weigh about 135 pounds. The object was held at stomach height in a threatening manner and appeared to be silver.

1. What was the suspect's height?
2. What was the suspect's age?
3. What was the suspect's hair color?
4. What was the suspect's build?
5. What was the suspect's weight?
6. What was the suspect's gender?

Weapon Scenario:

At around 3 AM a suspect was seen leaving a sport's bar downtown. Witnesses say the suspect was very tall, about 6' 3". Suspect was stumbling and waving a black object, which witnesses reported to resemble a handgun. Witnesses say the suspect appeared to be 34 years old with short, black hair. The suspect was seen with finger on what appeared to be a trigger. Suspect is of a large build, weighing about 280 pounds. Suspect continuously pointed the weapon in the direction of witnesses.

1. What was the suspect's height?
2. What was the suspect's age?
3. What was the suspect's hair color?
4. What was the suspect's build?

5. What was the suspect's weight?
6. What was the suspect's gender?

BALL STATE UNIVERSITY

Office of Research Integrity
Institutional Review Board (IRB)
2000 University Avenue
Muncie, IN 47306-0155
Phone: 765-285-5070

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DATE: March 29, 2017

TO: Barbara Hall

FROM: Ball State University IRB

RE: IRB protocol # 1048890-1
TITLE: Weapon Focus in the Written Word
SUBMISSION TYPE: New Project

ACTION: APPROVED
DECISION DATE: March 29, 2017
REVIEW TYPE: **EXEMPT**

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The Institutional Review Board reviewed your protocol on March 29, 2017 and has determined the procedures you have proposed are appropriate for exemption under the federal regulations. As such, there will be no further review of your protocol, and you are cleared to proceed with the procedures outlined in your protocol. As an exempt study, there is no requirement for continuing review. Your protocol will remain on file with the IRB as a matter of record.

**Exempt Categories:**

| | |
|---|---|
| | **Category 1:** Research conducted in established or commonly accepted educational settings, involving normal educations practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods. |
| X | **Category 2:** Research involving the use of educational test (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior |
| | **Category 3:** Research involving the use of educational test (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under category 2, if: (i) the human subjects are elected or appointed officials or candidates for public office; or (ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter. |
| | **Category 4:** Research involving the collection of study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. |

| | |
|---|---|
| | **Category 5:** Research and demonstration projects which are conducted by or subject to the approval of Department or agency heads, and which are designed to study, evaluate or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in methods or levels of payment for benefits or services under these programs. |
| | **Category 6:** Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed which contains a food ingredient at or below the level and for a use found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture. |

**Editorial Notes:**

1. N/A

While your project does not require continuing review, it is the responsibility of the P.I. (and, if applicable, faculty supervisor) to inform the IRB if the procedures presented in this protocol are to be modified or if problems related to human research participants arise in connection with this project. **Any procedural modifications must be evaluated by the IRB before being implemented, as some modifications may change the review status of this project.** Please contact (ORI Staff) if you are unsure whether your proposed modification requires review or have any questions. Proposed modifications should be addressed in writing and submitted electronically to the IRB (http://www.bsu.edu/irb) for review. Please reference the above IRB protocol number in any communication to the IRB regarding this project.

**Reminder:** Even though your study is exempt from the relevant federal regulations of the Common Rule (45 CFR 46, subpart A), you and your research team are not exempt from ethical research practices and should therefore employ all protections for your participants and their data which are appropriate to your project.

Bryan Byers, PhD/Chair
Institutional Review Board

Christopher Mangelli, JD, MS, MEd, CIP/Director
Office of Research Integrity